DEC STD 048-0 Metallic Raw Material Selection and Identification

DOCUMENT IDENTIFIER: A-DS-EL00048-00-0000 Rev J1, 16-Jan-1992

ABSTRACT: This standard describes 48-class Material Identifiers and Part Numbers. It also provides cross-reference information to other documents that are used for identifying and selecting raw materials.

APPLICABILITY: Information contained in this standard is mandatory for defining and identifying 48-class raw materials on documentation.

STATUS: APPROVED 16-Jan-1992; use VTX SMC for current status.

This document is confidential and proprietary, and is the property of Digital Equipment Corporation. It is an unpublished work protected under applicable copyright laws.

© Digital Equipment Corporation. 1988, 1992. All rights reserved.

DEC STD 048-0 Metallic Raw Material Selection and Identification

DOCUMENT IDENTIFIER: A-DS-EL00048-00-0000 Rev J1, 16-Jan-1992

REVISION HISTORY:	Rev A,	16-Dec-1982	
	Rev B,	17-Feb-1983	ECO Number MLO01
	Rev C,	19-Jan-1984	ECO Number MLO02
	Rev D,	19-Jul-1984	ECO Number APO03
	Rev E,	02-May-1985	ECO Number APO04
	Rev F,	26-Jun-1987	ECO Number LJO05
	Rev H,	26-Sep-1988	ECO Number CTS06
	Rev H1,	12-Sep-1988	Never Released
	Rev H2,	25-Oct-1989	ECO Number CTS07
	Rev J,	21-Dec-1990	ECO Number CTS08
	Rev J1,	16-Jan-1992	ECO Number NRO09

Document Management Category:	Raw Materials/Mechanical Technology (HPM)
Responsible Department:	Advanced Materials and Process Technology (AMPT)
Responsible Person:	Richard Ceremsak
SMC Writer:	Don Mehaffey

APPROVAL: This document has been reviewed and recommended for approval by the General Review group for its category. Revision J1 is a clerical change.

Richard J. Ceremsak - Advanced Materials and Process Technology

---

Eric Williams - Standards Process Manager

Direct requests for further information to:

Richard J. Ceremsak
Use $ VTX ELF for the latest location information.

Use VTX SMC to order copies of this document from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

The DIGITAL logo is a trademark of Digital Equipment Corporation.
Teflon is a registered trademark of E.I. du Pont de Nemours & Company

CONTENTS

1 INTRODUCTION 1
1.1 PURPOSE 1
1.2 SCOPE 1
1.3 RESPONSIBILITIES 1
1.3.1 Design Engineering 1
1.3.2 Procurement 1
1.3.3 Manufacturing 1
1.3.4 Central Specification Control Systems (CSCS) 1

2 SUMMARY 2

3 MATERIAL IDENTIFIER 2
3.1 FORMAT 4
3.1.1 Metallic Material 4
3.1.2 Third Character Significance 5
3.1.3 Fourth Through Ninth Character Significance 5
3.1.3.1 Metallic Material 5
3.1.3.2 Plastic Material 6
3.2 USE OF MATERIAL IDENTIFIER 7

4 PART NUMBER 8
4.1 CATEGORY IDENTIFIER 8
4.2 SEQUENTIAL IDENTIFIER PER CLASS 8
4.3 VARIATION FIELD 9

Appendix A PLASTIC MATERIAL 11

Appendix B REFERENCED DOCUMENTS 15

B.1 EL-Class Digital Documents 15

B.2 Other Documents 15

B.3 Ordering Information 15
B.3.1 North America 15
B.3.2 Non-North American Sources 15

FIGURES

1 Sample Fabrication Drawing Title Block Showing Material Identifier 10
2 The Material Identifier Format for Plastic Material 11

TABLES

1 General Specifications and ASTM Standards by Material 3
2 Material Identifier for Aluminum Alloy Sheet and Plate ASTM B209/B209M 48 - J XX YY - ZZ 7

1 INTRODUCTION

1.1 PURPOSE

This standard defines the conventions for identifying metallic raw material on engineering documentation, and defines the correlation of Material Identifiers with 48-Class Part Numbers. Material Identifiers are used for documentation purposes such as automated parts lists (KPLs), and fabrication drawings. 48-Class Part Numbers are used on purchase orders, manufacturing bills of materials (MBOMs), and for distribution and inventory purposes.

1.2 SCOPE

This standard provides an explanation of the 48-Class Material Identifier used for engineering documentation, and provides a method to determine the corresponding Part Numbers.

This standard also identifies the ASTM Specifications and General Specification documents corresponding to each Material Identifier.

1.3 RESPONSIBILITIES

1.3.1 Design Engineering

Design engineers are responsible for defining raw material on documentation by using the conventions described under main heading 3 of this standard. Design engineers must consult with Advanced Materials and Process Technology (AMPT) if a Material Identifier cannot be determined.

1.3.2 Procurement

Individuals who use engineering documentation for procurement purposes are responsible for the correct identification of 48-Class Part Numbers, as defined in main heading 4 of this standard.

1.3.3 Manufacturing

Manufacturing individuals using parts lists or fabrication drawings are responsible for the correct identification of 48-Class Part Numbers, as defined in this standard.

1.3.4 Central Specification Control Systems (CSCS)

CSCS (NRO5/M2, DTN: 234-4963) is responsible for keeping the 48-Class General Specification documents up to date with the most recent Part Numbers, and (DTN: 234-4653) for assigning Part Numbers using the method described in this standard. CSCS is also responsible for entering the Material Identifiers and Part Numbers into the Specification Control Data Base (SCDB).

2 SUMMARY

The identification of raw materials on an engineering document uses a Material Identifier in the same format as a Part Number. This includes predefined fields that identify the prominent characteristics of each material. The Material Identifier can be cross-referenced to a General Specification (GS), which contains the appropriate ASTM Specification number for that material and provides 48-Class Part Numbers. The Part Numbers are then used to procure material in predefined units.

Table 1 provides a cross-reference between the GS and ASTM Specifications for each raw material. The referenced GS documents provide information on Part Numbers; each part's specific thickness, width, length, weight, and UNS code (Unified Numbering System code, as defined in ASTM E527, *Standard Recommended Practice for Numbering Metals and Alloys* (UNS).

3 MATERIAL IDENTIFIER

The 48-Class Material Identifiers are to be used by the design engineer for documentation such as KPLs and engineering drawings. The Material Identifier does not represent the form in which the material is identified for purchase, stocking, or disbursing; see main heading 4 for a description of Part Numbers that are used for that purpose.

NOTE

The General Specifications and ASTM Specifications listed in Table 1 are available as part of EL-SM321-00, *Guide to Raw Material Selection*. In Table 1, where a separate metric ASTM document exists, that document is denoted with an M suffix. For example, A366/A366M. If a document has combined English and metric units, it is denoted by (M). For example, A666(M).

NOTE

Plastic materials with 48-Q Material Identifiers, within DEC STD 048-0, are listed in Appendix A for REFERENCE ONLY. See 3.1.3.2.

Table 1: General Specifications and ASTM Standards by Material

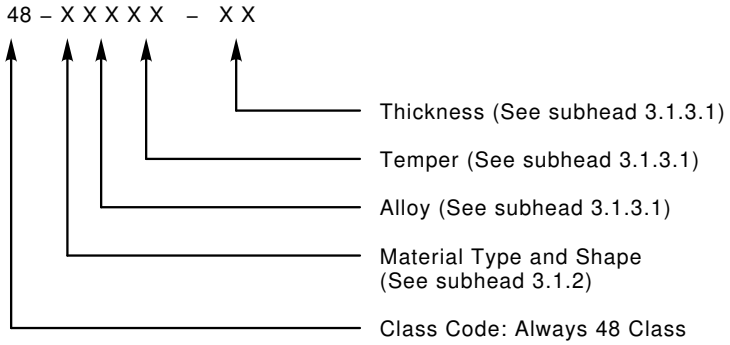
MATERIAL	GENERAL SPECIFICATION	ASTM SPECIFICATION
STEEL		
Cold rolled sheet	A-PS-4811001-GS-0	A366/A366M
Hot rolled sheet	A-PS-4811002-GS-0	A570/A570M
Mill-coated, cold rolled sheet	A-PS-4811003-GS-0	A792/A792M, A591 /A591M
Strip - Spring Material	A-PS-4812001-GS-0	A684/A684M
Bars - Cold Finished	A-PS-4813001-GS-0	A108
Mechanical Tube - Welded	A-PS-4814001-GS-0	A513
Mechanical Tube - Seamless	A-PS-4814002-GS-0	A519
Wire - Cold Drawn	A-PS-4811004-GS-0	A227/A227M, A853
ALUMINUM		
Sheet and plate	A-PS-4821001-GS-0	B209/B209M
Bar, rod, and wire	A-PS-4822001-GS-0	B211/B211M
Extruded bar, rod, wire, shapes and tube	A-PS-4823001-GS-0	B221/B221M
STAINLESS STEEL		
Plate, sheet and strip - 300 series	A-PS-4831001-GS-0	A167
Austenitic Stainless Steel, High-Strength Spring Material	A-PS-4831002-GS-0	A666(M), A313/A313M
Plate, sheet and strip - 400 series	A-PS-4831003-GS-0	A176(M)
Bar - Free machining	A-PS-4832001-GS-0	A582
Bars and shapes	A-PS-4832002-GS-0	A276(M)
Tubing - Welded and seamless - 300 series	A-PS-4833001-GS-0	A269 (M)
FREE-CUTTING BRASS		
Rod, bar and shapes	A-PS-4861001-GS-0	B16/B16M
BRASS		
Plate, sheet, strip, and rolled bar	A-PS-4862001-GS-0	B36(M)
PHOSPHOR BRONZE (INCLUDING LEADED AND BEARING)		
Plate, sheet, strip, and rolled bar	A-PS-4863001-GS-0	B103(M)
COPPER		
Plate, sheet, strip, and rolled bar	A-PS-4864001-GS-0	B152/B152M
COPPER-BERYLLIUM		
Plate, sheet, strip, and rolled bar	A-PS-4865001-GS-0	B194(M)
INDUSTRIAL WIRE CLOTH and SCREENS		
Square Opening Series	A-PS-4834001-GS-0	E437(M)

3.1 FORMAT

The Material Identifier, having a 2-5-2 format as specified in *DEC STD 012-0 Part Identification Standard*, uses all alphabetic characters with the exception of the initial 48-designation.

3.1.1 Metallic Material

The Material Identifier format is:


48 – X X X X X – X X
Thickness (See subhead 3.1.3.1)
Temper (See subhead 3.1.3.1)
Alloy (See subhead 3.1.3.1)
Material Type and Shape
(See subhead 3.1.2)
Class Code: Always 48 Class

NOTE

No blank spaces are allowed within this coding.

NOTE

This does not apply to some 48-class numbers, for example, 48-8xxxx-xx, Miscellaneous non-metallic materials.

3.1.2 Third Character Significance

The third character of the Material Identifier designates the type of material and shape. It is assigned as follows:

48-Axxxx-xx	Steel, cold rolled sheet
48-Bxxxx-xx	Steel, hot rolled sheet
48-Cxxxx-xx	Steel, mill-coated, cold rolled sheet
48-Dxxxx-xx	Steel, strip-spring material
48-Exxxx-xx	Steel, bars - cold finished
48-Fxxxx-xx	Steel, welded tube
48-Gxxxx-xx	Industrial wire cloth and screens (square opening series)
48-Hxxxx-xx	Steel, seamless tube
48-Jxxxx-xx	Aluminum, sheet and plate
48-Kxxxx-xx	Aluminum, bar, rod, and wire
48-Lxxxx-xx	Aluminum, extruded bar, rod, and wire
48-Mxxxx-xx	Stainless Steel, plate, sheet - 300 series
48-Nxxxx-xx	Stainless Steel, spring material
48-Oxxxx-xx	Steel, wire
48-Pxxxx-xx	Stainless Steel, plate, sheet - 400 series
48-Qxxxx-xx	Previous Plastics' Identifiers - Appendix A
48-Rxxxx-xx	Stainless Steel, bar, free machining
48-Sxxxx-xx	Stainless Steel, bars and shapes
48-Txxxx-xx	Stainless Steel, tubing - 300 series
48-Uxxxx-xx	Brass, free cutting, rods and bars
48-Vxxxx-xx	Brass, plate, sheet, strip, rolled bar
48-Wxxxx-xx	Phosphor Bronze, plate, sheet, strip, bar
48-Xxxxx-xx	Unassigned
48-Yxxxx-xx	Copper, sheet, strip, plate, bar
48-Zxxxx-xx	Copper-Beryllium, plate, sheet, strip, bar

3.1.3 Fourth Through Ninth Character Significance

The fourth through the ninth characters of the Material Identifier differ according to the material being used.

3.1.3.1 Metallic Material

The coding for metallic materials is described in the individual GS specifications. As an example, in A-PS-4821001-GS-0. Table 2 shows the coding method for aluminum sheet and plate. The Material Identifier, 48-JAABB-CC, indicates a material that is aluminum alloy 1100, with T3 temper and having a thickness of 0.031 inch. The UNS code number for this alloy is A91100. The procedure for identifying a material, for example, Plain Carbon Steel Sheet, Commercial Quality, is as follows:

1. Consult Table 1 of this standard.
2. Table 1, "General Specifications and ASTM Standards by Material", of this Standard, specifies that Steel, Cold-rolled sheet is defined in "General Specification" A-PS-481101-GS-0 and ASTM Specification A366/A366M.

3. Consult A-PS-481101-GS-0, Table III, "Material Identifier Number, Steel, Carbon, Cold-rolled Carbon Steel, ASTM A366". The table contains the data needed. 48-ACCAA-SS is Type 1018 (UNS G10180) carbon steel sheet, with a Rockwell "B" hardness of 45-60 and it is 0.119 inch (3 mm) thick.
4. Now consult ASTM A366/A366M for the remaining information. This product specification contains limited chemical and mechanical property data. More specific information can be found elsewhere, if needed. A366, Paragraph 2, "Applicable Documents" shows ASTM A109/A109M and ASTM A568/A568M as other references. The necessary chemical composition data is found in Table X1.1 "Standard Steels-Carbon Sheet Steel Compositions" and in Table X1.2 "Standard Chemical Ranges and Limits".
5. ASTM A109/A109M, Table 3 "Hardness Requirements" lists the various tempers and the corresponding hardness limits.

3.1.3.2 Plastic Material

Plastic raw materials have been withdrawn from this standard. They will henceforth be defined in *DEC STD 076-0 Plastics Selection and Identification*. Existing plastic material identifiers having the 48-Qxxxx-xx structure will continue to be available for use on engineering documents. Table 3, Plastic Material Identifiers, as it appeared in Rev E of DEC STD 048-0, is shown as Appendix A for REFERENCE ONLY. This format will not be used to assign future/new material identifiers for plastics.

3.2 USE OF MATERIAL IDENTIFIER

Figure 1 is a sample title block of a fabrication drawing (or IA - Inseparable Assembly - drawing), showing placement and use of the 48-Class Material Identifier. The Design Engineer shall place the Material Identifier in the format shown in the drawing title block. A short description of the material shall be placed below the Material Identifier. This description will include the generic material type and gauge (if applicable).

Table 2: Material Identifier for Aluminum Alloy Sheet and Plate ASTM B209/B209M
48 - J XX YY - ZZ

ALLOY (XX)			TEMPER (YY)		THICKNESS (NOMINAL) (ZZ)	
Code	Number	UNS #	Code	Type	Code	Inches[1]
AA	1100	A91100	AA	0	AA	0.016
BB	2024	A92024	BB	T3	BB	0.025
CC	3003	A93003	CC	T4	CC	0.031
DD	5052	A95052	DD	T5	DD	0.050
EE	6061	A96061	EE	T6	EE	0.063
FF	6063	A96063	FF	T351	FF	0.078
GG	7075	A97075	GG	H14		
			HH	H32	HH	0.090
			JJ	H114	JJ	0.094
					KK	0.125
					LL	0.160
					MM	0.190
					NN	0.375
					PP	0.563
					RR	0.625
					SS	0.687
					TT	0.750
					UU	1.125

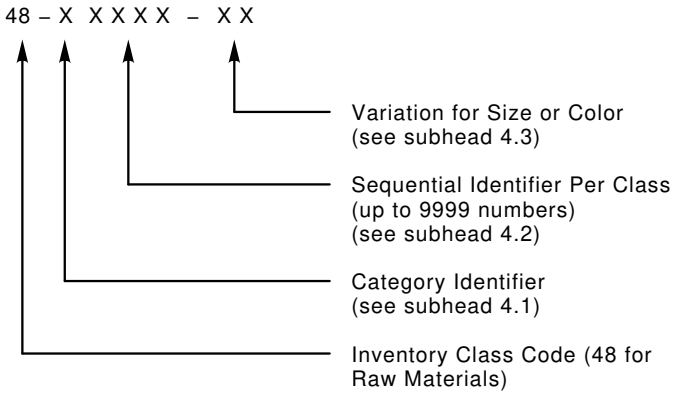
[1]See ASTM B209M for comparable metric equivalents.

The Material Identifier shall then be put on the 74-class KPL according to *DEC STD 025-0 Parts Lists*. A sample KPL is shown in Figure 2.

The Material Identifier can then be used to determine the appropriate Part Number, used for procurement purposes. See main heading 4 for an explanation of this procedure.

4 PART NUMBER

The 48-Class Part Number is used for procurement and other in-house purposes. It does not appear on the fabrication drawing or parts list. Central Specification Control Systems assigns all 48-Class Part Numbers. The Part Number format is:



NOTE

No blank spaces are allowed within this coding.

4.1 CATEGORY IDENTIFIER

The third character of the Part Number designates the material category. Each material category has its own sequential numbering system, determined by Central Specification Control Systems.

The category identifier is assigned as follows:

48-1xxxx-xx	Steel
48-2xxxx-xx	Aluminum
48-3xxxx-xx	Stainless steel
48-4xxxx-xx	Open
48-5xxxx-xx	Inactive - reserved for future part numbers
48-6xxxx-xx	Brass, bronze, copper
48-7xxxx-xx	Open
48-8xxxx-xx	Miscellaneous non-metallic
48-9xxxx-xx	Open

4.2 SEQUENTIAL IDENTIFIER PER CLASS

Central Specification Control Systems assigns this four-character identifier sequentially for each material type. It is identical for similar metallic materials with the same temper and alloy numbers. For example, Part Numbers 48-20005-01 through 48-20005-23 are all aluminum alloy sheets with Alloy Number 5052 and Temper H32. These items vary in thickness, width, or length.

4.3 VARIATION FIELD

The variation field is a two-character code identifying the particular size (thickness, width, or length) for metallic materials. It is assigned sequentially to indicate each different variation to the basic part type.

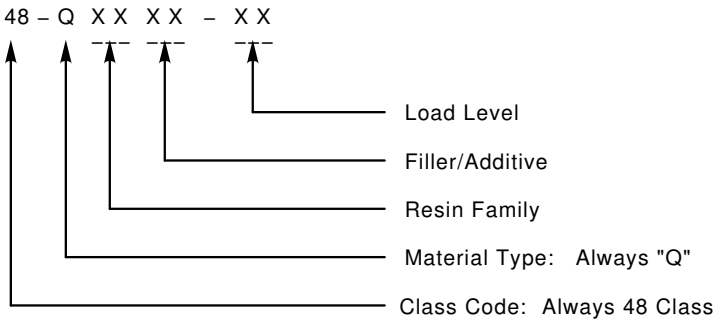
Figure 1: Sample Fabrication Drawing Title Block Showing Material Identifier

APPENDIX A PLASTIC MATERIAL

NOTE

Information in Appendix A is for reference only. See subhead 3.1.3.2.

Figure 2: The Material Identifier Format for Plastic Material



NOTE

Plastic material identifiers shown in Appendix A are for reference only and represent an obsolete system used on some engineering documentation. Plastic material identifiers shall henceforth be defined in *DEC STD 076-0 Plastics Selection and Identification*.

48-Q XX Resin Family		XX Filler Additive		XX Load Level (% of Filler)	
AA	Acrylonitrilebutedienestyrene (ABS)	AA	No Fillers	AA	00
BB	Polyphenylene Oxide (PPO)	BB	Glass Fiber	BB	01
CC	Polycarbonate	CC	Carbon Fiber	CC	02
DD	Nylon 6	DD	Glass Bead	DD	03
EE	Nylon 6/6	EE	Clay	EE	04
FF	Nylon 6/12	FF	Talc	FF	05
HH	Nylon 12	HH	Mica	HH	06
JJ	Acetal	JJ	Teflon	JJ	07
KK	Polystyrene	KK	Silica	KK	08
LL	Polyester (PBT)	LL	Molybdenum Disulfide	LL	09
MM	Polyester (PET)	MM	Carbon Black	MM	10
NN	Polyphenylene Sulfide	NN	Brass	NN	11
PP	Polyphenylene Ether	PP	Iron	PP	12
RR	Polyethylene	RR	Glass Cloth	RR	13
SS	Acrylic	SS	Blowing Agent	SS	14
TT	Polyurethane	TT	Nickel	TT	15
UU	Phenolic	UU	Aluminized Glass Fiber	UU	16
VV	Silicone	VV	Silver	VV	17
WW	Poly(amide-imide)	WW	Stainless Steel	WW	18
YY	Polysulfate	YY	Aluminum Flake	YY	19
ZZ	Polyethersulfone	ZZ	Rubber Modifier	ZZ	20
AB	Polyetherimide			AB	21
AC	Polyarylate			AC	22
AD	Polyethyletherketone			AD	23
AE	UHMW Polyethylene			AE	24
AF	Styrene Acrylonitrile (SAN)			AF	25
AH	Polyvinyl Chloride			AH	26
AJ	ABS-Polycarbonate Alloy			AJ	27
AK	Polyvinylidine Fluoride (PVDF)			AL	29
AL	Polysulfone			AK	28
AM	Modified Polysulfone			AM	30
				AP	32
				AR	33
				AS	34
				AT	35
				AU	36
				AV	37
				AW	38
				AY	39
				AZ	40

APPENDIX B REFERENCED DOCUMENTS

B.1 EL-Class Digital Documents

EL-Class Number	Document Title
EL-00012-00	*DEC STD 012-0 Part Identification Standard*
EL-00025-00	*DEC STD 025-0 Parts Lists*
EL-00076-00	*DEC STD 076-0 Plastics Selection and Identification*
EL-SM321-01	*Guide to Metallic Raw Material Selection - Volume 1*

Use VTX SMC to order copies of EL-class documents from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

B.2 Other Documents

Document Number	Document Title
ASTM E527	*Standard Recommended Practice for Numbering Metals and Alloys (UNS)*

B.3 Ordering Information

B.3.1 North America

In North America, ASTM documents can be obtained from:

American Society for Testing and Materials,
1916 Race Street, Philadelphia, PA 19103-1187. Phone: (215)299-5400
TWX: 710-670-1037
FAX: 215-977-9679

B.3.2 Non-North American Sources

Sources of ASTM documents in other parts of the world are listed below.

Argentina

Suministros Asociados S. A.[1]
Belgrano 321
1642 San Isidro
Buenos Aires, Argentina

[1] Sources marked by footnote 1 are exclusive ASTM distributors as disclosed by Eileen Finn, ASTM Customer Service, 22 October 1990.

American Books
Tucuman 994
1049 Buenos Aires, Argentina

Australia/New Zealand

Mr. David Myer
"ACEL" Information
666 Chapel Street
S. Yarra
Victoria 3141, Australia

Standards Association of Australia
PO Box 458
North Sydney NSW 2059, Australia

"DA" Books & Journals
11 Station Street
Mitcham 3132
Victoria, Australia

Brazil

Publicacoes Tecnicas Internacionais LTDA.[1]
R. Peixoto Gomide, 209
01409 Sao Paulo-SP, Brazil

China, Peoples' Republic

China National Publications
137 Chao Nei Da Jie
PO Box 88F
Beijing, China

Europe

ASTM European Office[1]
27-29 Knoll Piece
Wilbury Way
Hitchin, Herts SG4 OSX
England

India

Book Supply Bureau[1]
D-44
South Extension
New Delhi-110049
India

Allied Publishers Private Ltd.[1]
Ballard Estate
751 Mount Road
Madras 600-002
India

Japan

Japanese Standards Association
1-24, Akasaka 4
Minato-Ku
Tokyo 107
Japan

Kinokuniya Co. Ltd.[1]
Book Import Department
PO Box 55 Chitose
Tokyo 156
Japan

Maruzen Co., Ltd.
Book Division
PO Box 5050
Tokyo Intl 100-31
Japan

Korea

Korean Standards Association
105-153, Kongkuck-Dong
Mapo-Ku
Seoul 121,
Korea

Korea Technical Exchange Co.
C. P. O. 5752
Seoul 100
Korea

Latin America, South America, and Mexico

International Library Service[1]
2722 N. 650 East
PO Box 735
Provo, UT 84601

Pakistan

Progressive International Agencies[1]
PO Box 8069
Karachi 2913
Pakistan

Taiwan

Tao's Publishers & Book Co., Ltd.
Room 1112-11th Floor - No.95
Chung Ching S. RD SEC 1
Taipei
Taiwan

```
+-------------------------------------------------------------------+
|                        READER COMMENTS                            |
|                                                                   |
| Your  comments  and suggestions  will help  Standards and Methods |
| Control improve their services and documents.                     |
+-------------------------------------------------------------------+
```

Did you request this document? _____ If so, did it arrive within a satisfactory period of time? _____ Please comment.

What are your impressions of this document? Consider format, organization, completeness, readability, and illustrations.

————————FOLD ON THIS LINE———————————————————— -

Did you find technical or clerical errors in this document? If so, please specify the page number(s) and the error(s).

Are the instructions for the update package clear? _____
Was an index available? _____ If not, is one needed? _____
Do you have other suggestions for improving this document?

The following information is optional:

Name _____ Mailstop _____

Department _____ Node _____

Send your comments to JOKUR::PROJECTS, or fold, staple, and send this page through interoffice mail to:

```
+------------------------------+
|       READERS' COMMENTS      |
| STANDARDS AND METHODS CONTROL |
|           NRO4/D4            |
+------------------------------+
```